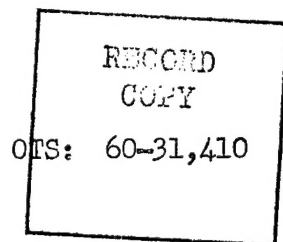


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REVIEW OF TEXTBOOK A COURSE IN EPIDEMIOLOGY

- USSR -

by I. F. Pichkur

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## F O R E W A R D

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REVIEW OF TEXTBOOK A COURSE IN EPIDEMIOLOGY

(Edited by Professor I. I. Yelkin, Moscow, USSR, 1958)

Following is a translation of a review by I. F. Pichkur of the above named textbook in the Russian-language periodical Sovetskoye Zdravookhraneniye (Soviet Public Health), Moscow, Vol. XIX, No. 1, 1960, pages 83-87.

The beginning of the year saw the publication of a textbook in epidemiology compiled by a group of authors under the editorship of Professor I. I. Yelkin.

Textbooks and manuals on epidemiology are not published so frequently in our country and for this reason the appearance of a new textbook is of considerable interest for the medical world, all the more so since outstanding specialists took part in compiling it. A good text in epidemiology is greatly needed to train students in medical institutes, nor is it less needed by physicians of many specialties, infectionists, therapists, pediatricians, etc., and, of course, it is needed most of all by epidemiologists and public health physicians of various specialties.

The principal requirement for a text in any field, including epidemiology, is that it must reflect the most recent achievements in theory and practice. In addition, the textbook must give students the sum of knowledge necessary to do epidemiological work successfully.

To what degree does the new textbook in epidemiology meet these requirements?

The section on general epidemiology (written by I. I. Yelkin) in which certain principles of the theory of the epidemic process must be analyzed as well as the system of measures making possible a marked reduction in all infectious diseases and the complete eradication of certain ones in the first seven-year plan, is written very briefly and suffers from substantial defects.

In studying this section the students will not obtain a clear concept of the essential nature of the epidemic process since the textbook does not give a satisfactory description of the determining elements, nor is there any exposition of a profound and complete system of prophylactic and epidemic control measures. All this most important section of epidemiology is discussed by the author in 12 pages! The brevity of an exposition is praiseworthy, but only if it gives a clear presentation of the problem or subject. Alas, in this case this is not so.

In chapter VIII - on the basic principles of the prevention of infectious diseases in the USSR (8½ pages) - there is a very short (on 1 page) discussion of the necessity and importance of planning prophylactic and epidemic control measures, but nothing is said of how to draw up these plans nor what they are. Can a student or physician, using this textbook, draw up plans for prophylactic and epidemic control measures for any specific infection?

There is a too general and incomplete exposition of measures for rendering the source of infection harmless. Measures for rendering harmless the pathways of transmission, or as the author calls them "measures for interrupting (!) the pathways of transmission", are allotted only 14 lines. To increase the resistance of the public, the author recommends only preventive inoculation, although it is well known that the state of resistance is also greatly affected by such nonspecific factors as good nutrition (including vitamins), physical culture and hardening of the body, correct regulation of work and recreation, etc. Why does the author not mention them?

Far from enough is said about the method for making an epidemiological examination in general and as applied to any group of infectious diseases although epidemiological examination is the basic content of all epidemiological work.

In chapter X - on measures to be taken in case of an epidemic source of infection - the author gives a brief exposition of a whole series of measures, but does not mention making an epidemiological examination which must be done immediately (during the first hours) after the discovery of an infectious patient. How can all these measures mentioned by the author be carried out without a preliminary epidemiological examination? There are also inaccuracies in the definitions. For example, on page 6 we find: "Epidemiological observation is a very complex method of examination". In epidemiology, epidemiological observation does not mean a method of examination; this concept characterizes a specific complex of measures carried out in an epidemiological source of infection.

In the group of particularly dangerous infections (p. 83) the author includes only plague and cholera although naturally smallpox also belongs there. The system of measures to be used for particularly dangerous infections is given only 4 lines and for some reason the author calls these measures "observation" (p. 83). It is impossible to agree with this, since the system of measures dealing with the source of particularly dangerous infections is called quarantine, not observation. The system of measures proposed for quarantine, moreover, is quite different from observation by the mere fact that quarantine provides for complete and strict isolation of a carrier of a particularly dangerous disease and for an appropriate epidemic control regimen while in observation only certain isolation and restrictive measures are applied.

Nothing is said of the connection of epidemiology and epizootology or of the necessity for studying epizootology. How is it possible to effectively combat zoonoses without known their epizootology?

The sections on general epidemiology - disinfection, insect and rat eradication - were compiled by I. R. Stepanov. These sections also contain statements with which I cannot agree. For example, this definition is given: "The objective in disinfection is to interrupt the pathways of transmission." What pathways of transmission and

the transmission of what are being discussed in this definition? It is clear to everyone that disinfection does not interrupt anything but produces disinfection. For this reason the objective (in the broadest sense of the word) is the disinfection of those objects in the environment which may become a cause of human infection and disease.

The author incorrectly uses the term "specific factors in transmission". He includes, for example, water, flies, hands and food products among the specific factors which transmit intestinal diseases, and air, diseases of the respiratory tract. What sort of specific factors are these when they can be used to transmit the absolute majority of infectious diseases?

It is incorrect to subdivide disinfection into current and terminal "depending on the stage of transmission at which disinfection takes place (counting from the moment of excretion of the infectious principle from the organism)". It is generally accepted that current disinfection can be considered as disinfection which takes place at the site of the patient (or bacterial carrier) for the purpose of disinfecting his excretions and the objects contaminated by him during the entire infectious period. All textbooks, including this one being reviewed, says that current disinfection takes place at the epidemic source before the moment of hospitalization of the patient or his recovery (when he remains at home). Such a statement, in our view, is incorrect. Current disinfection must take place at the epidemic source, even after terminal disinfection, during the course of the entire period of observation of the carrier. This requirement is based on the fact that after terminal disinfection bacterial carriers may still be present at the source of infection and they will infect objects in the environment.

Chemical disinfectants are discussed in a very simplified fashion; their uses in different infections are not indicated as a rule and this, of course, places the student in a very difficult situation. The author for some reason states that the use of a solution of calcium hypochlorite for disinfecting excretions (feces, sputum) is impractical (p. 127) although 16 lines later he recommends these solutions for disinfection in intestinal infections, diseases of the respiratory tract, blood infections, skin diseases but does not indicate how they are to be used.

There is an inaccurate analysis of the use of benzene hexachloride for disinfection. As we know, the use of benzene hexachloride in treating the inner walls of living quarters or service or industrial buildings is forbidden in view of its unpleasant odor and toxicity, but the author speaks only of its limited use under these conditions. Such a recommendation is, of course, incorrect.

There is absolutely no discussion of technical means of disinfection, or insect or rat extermination, such as the possible types of sprayers, dusters, etc. although without these instruments it is impossible to disinfect or eradicate insects and rats effectively. Types of booths, their design and use, as well as their operation depending on the aim of the disinfection and the quality

of the things being disinfected, is not discussed in the textbook. The new combined DDA-53 disinfecting-shower installation is described in 4 lines. Can the student learn to do work in disinfection or insect and rat extermination on the basis of such material?

We might also speak of the not entirely correct proportion of space given the material under discussion. For instance, 19 pages are given to the history of epidemiology and 22 pages to the basic section, the theory of the epidemic process.

Quite a few essential comments can be made about specialized epidemiology. The material is not discussed successfully either from the viewpoint of methods or instruction. There are no headings (for example, etiology, pathogenesis, clinical aspects, diagnosis, insusceptibility, etc.) by which to become quickly oriented.

Prophylactic and epidemic control measures concerned with a specific infection are not discussed completely enough, and what is most important without sufficient consideration for the requirements of students in studying epidemiology. For example, in the general epidemiology there is no clear and complete exposition of epidemiological examination methods; nor is anything said of this regarding any particular infection. Why, for example, in discussing the epidemiology of typhoid fever, does such an experienced epidemiologist as S. V. Guslits say not a single word about how to conduct an epidemiological examination at the source of typhoid infection? We have the same situation with this problem in other chapters on specialized epidemiology. How can the student learn this basic part of epidemiological work if almost nothing is said about it in a textbook on epidemiology?

As a rule, there are no indications of methods for carrying out current and terminal disinfection but only the necessity of so doing is mentioned (typhoid fever, dysentery, anthrax, diphtheria, tuberculosis, etc.). There is insufficient analysis of clinical, laboratory (microbiological) and epidemiological diagnosis in each infection. There are no developed plans for prophylactic and epidemic control measures for each infection. Insufficient attention is given to the effective treatment of infectious patients as one of the important factors for rendering sources of infection harmless. There is little discussion of the principles and system of coordinating the work of sanitary-epidemiological and prophylactic-therapeutic institutions aimed at a marked reduction in infectious diseases.

In speaking of measures for preventing and controlling individual infections, the authors do not cite modern examples from which to learn how to work effectively. For example, for many years Leningrad (population over 3,000,000) has had an effective system for controlling diphtheria which has given remarkable results: morbidity and mortality in diphtheria have been literally reduced to isolated cases, but nothing is mentioned of this in the epidemiology textbook. Besides diphtheria control is now effective not only in Leningrad.

In the section on intestinal infections almost nothing is said about the epidemiology and prophylaxis of colienteritis, while the problem of the colienteritides, particularly in children up to 2 years of age, is one that disturbs all medical circles particularly pediatricians, epidemiologists and specialists in infectious diseases.

The textbook raises no questions regarding the marked reduction in all infectious diseases and the total eradication of some of them which is now the program of action for all sanitary-epidemiological and prophylactic-therapeutic institutions.

Some comments could also be made with regard to individual infections. In the chapter on "Typhoid and paratyphoid fevers A and B" by S. V. Guslits, it is indicated that the sources of infection are patients, convalescents and so-called healthy carriers, and nothing is said of chronic germ carriers who have recovered from typhoid fever although they have an important role in the spread of typhoid fever and the paratyphoids. In characterizing the incidence of typhoid fever by age groups, the author writes; "The incidence of typhoid fever by age groups presents nothing new." This is simply not the case. At present we are observing a relatively high incidence of typhoid fever among children of the youngest age group which is the cause for developing a special vaccine for children and for inoculating children from 7 years of age and up against typhoid fever and paratyphoid.

In speaking of the necessity for early hospitalization of typhoid patients the author writes: "At present this is quite possible on the basis of hemocultures." In practice early hospitalization is not carried out on the basis of hemoculture results but on the basis of clinical symptoms, and the examination of blood for a hemoculture is usually done with already hospitalized patients. There is a vague and overbrief discussion of measures relating to those convalescing from typhoid fever and bacteria carriers.

Illustrative material is very out of date, from 20 to 40 years old. The author says nothing of the energetic work being done by public health agencies in obtaining a maximum reduction in cases of typhoid fever in the near future and the total eradication of the disease in the next Seven-Year Plan.

In the chapter on dysentery (by I. I. Yelkin) dysentery is described not as a component of a group of acute intestinal infections but in complete isolation. At present the problem is justifiably raised concerning the entire group of acute intestinal infections because a clinical and epidemiological differentiation of acute enterocolitis from dysentery is in a great number of cases very difficult and almost impossible.

The author to no purpose cites the "unique" data of G. K. Gurbanov on the possibility for culturing bacteria from Volga River water, sewage and the city water main (30 dysentery cultures per 150 samples of water) since these data raise great doubts. Similar results have never been obtained or published by any one so far and, on the other hand, all investigators speak of the difficulty and comparative rarity of isolating pathogenic bacteria of the enteric group from water.



The author overestimates the role of flies in the transmission of dysentery, considering them the principal factor, while in fact there are convincing data on the existence of a high incidence of dysentery under climatic conditions where there are few flies or even none at all. Flies do of course play a definite role in the transmission of intestinal infections but dysentery is basically the "disease of dirty hands" as many Soviet and foreign authors have correctly stated.

Nothing is said about correct therapy as a most important factor in rendering sources of dysentery infection harmless. Particularly effective is the so-called stage method for treating children with acute intestinal infections. The plan for dysentery prophylactic and control measures is discussed neither clearly nor completely but only in general terms. Nothing is said of how to organize and carry out measures in a source of epidemic infection, nor is anything said about carrying out an epidemiological examination in dysentery foci. Of great importance in successfully controlling the group of acute intestinal infections is the extensive cooperation of public health personnel and Red Cross and in Red Crescent nurses as well as the entire public, but nothing is mentioned of this.

In the chapter on poliomyelitis (by V. M. Zhdanov) some of the data is obsolete. In speaking of the laboratory diagnosis of poliomyelitis, the author for some reason mentions only the method for isolating the virus and does not mention serological examinations of paired sera of the blood of patients, although they are also of great importance in diagnosis. With regard to the mechanism of transmission the author holds to the opinion that the poliomyelitis pathogens enter the human body through the digestive tract. At the same time he recommends (p. 225) that wards with polio patients observe a regimen set up for intestinal and droplet infections. Incidentally, in instructions on poliomyelitis control measures (affirmed by V. M. Zhdanov as Deputy Minister of Health of the USSR, February 14, 1955) it says that transmission by air-borne droplets is also possible in the case of close contact with the patient during the first 7 - 10 days after the onset of the disease.

Throughout the entire Soviet Union there is an energetic campaign against dysentery but nothing is said of this in the textbook. Nothing is said of the marked reduction in the incidence of diphtheria and its eradication in Leningrad, Rostov-on-Don, in the Ukraine and other regions, on control and prophylactic methods which have given successful results. Measures for diphtheria control are discussed too briefly and in general terms. The author (S. V. Guslits) devotes his main attention to preventive inoculations but does not give due weight to early and total hospitalization of all patients and those suspected of having diphtheria; he also says nothing of the importance of public health measures in controlling diphtheria, nor of the improvement of hygienic conditions in apartments, children's institutions, children's homes and schools. Nothing is said of the necessity for making an epidemiological examination of diphtheria carriers during the first hours after the patient is detected nor of



how it is to be done. There is no well-developed or consistent plan of measures for the eradication of diphtheria. It is also useful for the future physician to know what measures in controlling diphtheria must be taken by prophylactic-therapeutic and especially pediatric institutions (children's polyclinics, hospitals, consultations) and what sanitary-epidemiological stations must do, but the author gives no recommendations on this subject.

Starting with 1957, children under 5 years of age have been given inoculations with combined diphtheria-pertussis vaccine and then a revaccination with diphtheria anatoxin is given. However, there is no mention of this in the textbook, which once more points up its failure to meet the requirements of epidemiological practice. Problems in conducting inoculations against diphtheria are explained in the abstract without relation to current requirements. For example, each practicing physician now knows that inoculations need not only be given but their immunological effect must be tested by the Schick test. This is especially important with respect to children who have recovered from any infectious disease (influenza, measles, pertussis, etc.) or other serious illness following inoculation, after which the inoculative effect may be markedly weakened and even completely disappear; but the author does not speak about this.

The chapter on pertussis (S. V. Guslits, author), says that in the USSR a pertussis vaccine is being made, but there is no mention of the fact that the pertussis vaccine is being widely used both in the form of a pertussis monovaccine and in a combined pertussis-diphtheria vaccine.

In the chapter on influenza (V. M. Zhdanov) there are some rather incorrect statements about its distribution and infection of the public. For instance, on p. 272 it says "If we follow up epidemics (of influenza - Editor's comment) during the past decades we find that even during extremely intensive outbreaks not more than 3-5% of the population was ill" although later the author says that in the 1918-1920 pandemic (Spanish influenza) approximately 1,500,000,000 fell ill, i.e. over 70% of the earth's population, and in the 1957 influenza pandemic over 1 billion fell ill, i.e. approximately 40% of the earth's population.

The epidemiology of influenza has not been satisfactorily studied. This can be explained first by the fact that epidemiological examinations are not made in influenza and for this reason, of course, there is not a sufficient number of reliable epidemiological observations to make any kind of scientifically based epidemiological generalization. It would seem logical that the author should recommend that his readers study the epidemiology of influenza and would show how to do it, but the author does not do so and this can only be regretted. There is no outline of a plan for the prevention and control of influenza at ordinary times and when there is an outbreak. To control influenza effectively, we need a planned system of measures

carried out daily and continuously and when the number of cases of influenza increases markedly then we need to carry out still other measures, depending on the nature and characteristics of the epidemic outbreak. It would be very useful to write about this in a textbook on epidemiology.

We have dealt only with certain questions in general and specialized epidemiology, dealt with in the textbook of epidemiology by a group of authors under the editorship of Professor I. I. Yelkin. On the basis of these data we may say that the new textbook to a great degree fails to meet the requirements of modern Soviet epidemiology.

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